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species, *Pronuba maculata*, *Prodoxus marginatus*, *P. cinerius*, *P. aeneus* and *P. intermedius*), are described, and the paper concludes with remarks which point to these different Yucca Moths as admirable illustrations of the derivative origin of species.

### THE WYANDOTTES.

BY MAJOR J. W. POWELL.

The Indians now known as the Wyandottes, were first found on the lower St. Lawrence. Subsequently they inhabited a narrow district of country on the shores of Lake Huron, and were known as the Hurons; later they lived in Michigan about Detroit; then in Ohio in what is known as Wyandotte county; from Ohio they were moved to Kansas and placed on a reservation; and from Kansas to the Indian Territory. In their wanderings from point to point, as they were driven from advancing civilization, a few of their number were left behind, so that the Wyandottes are scattered from the lower St. Lawrence to the Indian Territory along the route of their migration. These Indians call themselves Wundat; the etymology of the word is not known. In their social organization four units are recognized—the family, the gens, the phratry and the tribe. The family, as the term is here used, is nearly synonymous with household. It is composed of the persons who occupy one lodge, or, in their permanent wigwams, one section of a communal dwelling. The head of the family is a woman. The gens is an organized body of consanguineal kindred in the female line. "The woman carries the gens," is the formulated statement by which a Wyandotte expresses the idea that descent is in the female line. Each gens has the name of some animal—the form of such animal being its tutelary god. Up to the time when the tribe left Ohio, eleven gentes were recognized as follows: Deer, Bear, Highland Turtle (striped), Highland Turtle (black), Mud Turtle, Smooth large Turtle, Hawk, Beaver, Wolf, Sea Snake, Porcupine. In speaking of an individual he is said to be a Wolf, a Bear, or Deer, as the case may be, meaning thereby that he belongs to that gens; but in speaking of the body of people comprising a gens they are said to be relatives of the Wolf, the Bear, or the Deer, as the case may be.

There are four phratries in the tribe—the three gentes, Bear, Deer and Striped Turtle constituting the first; the Highland Turtle, Black Turtle and Smooth Large Turtle the second; the Hawk, Beaver and Wolf the third; and the Sea-snake and Porcupine the fourth. The eleven gentes as four phratries constitute the tribe.

The civil government inheres in a system of councils and chiefs. In each gens there is a council composed of four women. These four women councilors select a chief of the gens from its male members; that is, from their brothers and sons. This gentile chief is the head of the gentile council. The council of the tribe is composed of the aggregated gentile councils. The tribal council, therefore, is composed one-fifth of men and four-fifths of women.

The government of the Wyandottes, with the social organization upon which it is based, affords a typical example of tribal government throughout North America. Within that area there are several hundred distinct governments. In so great a number there is great variety, and in this variety we find different degrees of organization, the degree of organization being determined by the differentiation of the functions of government and the correlative specialization of organic elements.

### A SIMPLE DEVICE FOR PROJECTING THE VIBRATIONS OF LIQUID FILMS WITHOUT A LENS.

BY H. S. CARHART, A. M., Professor of Physics and Chemistry, Northwestern University, Evanston, Ill.

This instrument is designed to project upon the screen the vibrations of a film of soapy water produced by the voice or by an organ pipe. It might be called the self-projecting phoneidoscope. It differs from Sedley Taylor's phoneidoscope in three particulars: first, the vibrations are commu-

nicated to the film through the agency of a mouthpiece and a ferrotype diaphragm; second, the vibrations are projected on a screen; third, the film is employed to project itself without a lens.

It consists of a wooden tube, having a telephone mouthpiece at one end and expanding into a large funnel at the other, the funnel being of metal. In the side of the tube a stop-cock is inserted. A film is obtained in the open end of the funnel and a little air is then blown through the stop-cock. This distends the film slightly, causing it to act as a convex mirror. It is then placed in a beam of sunlight and reflects it at the proper angle. Upon singing a note at the mouthpiece a sharply defined system of waves is projected. Photographs of these have been taken. Caps fitting into the funnel and provided with a square or triangular opening, are also employed to give films of different shape.

### THE LANGUAGES OF THE IROQUOIS.

BY MRS. E. A. SMITH.

The language of each nation represents its thought. If these thoughts have remained unrecorded, it is from the language itself that they must be obtained by tracing out the origin, history and meaning of its words. Each word has its history, which it can be made to reveal by tracing out the origin, history and their most hidden secrets, and the thoughts, customs and beliefs of the originator be read as truthfully as if recorded by the historian's pen. For "words unaided cannot lie;" twenty words in Tuscarora represent supernatural beings. Does this leave a doubt as to the tendency of their minds? The Tuscarora word for burial ground signifies "placed in the ground in a sitting posture," proving that some time in the past such was their method of burial. The very structure of the Indian languages, where the words are so self-explaining, affords unlimited scope to the etymologist in his search into word history. There are two distinct periods in the modern history of the Iroquois. The inundation of new ideas on the advent of the white man introduced almost a new vocabulary, differing according to the ideas of the observers. For instance, the horse when first seen by the Senecas was drawing logs, hence was called a log drawer. Another tribe saw it carrying packs, and termed it pack-carrier. The Tuscaroras adopted the English word and term it *ha-hath*. It is quite remarkable that so few words have been borrowed from the English. And these have become so Indianized by prefixes and appendages or changes in their vowel sounds as to be scarcely recognizable. Among them are: U-ts—oats; Sa-i tar—cider; Ha-hass—horse; Vi-nigair—vinegar; Qui-tair—Peter; Ta-wait—David; Tju-rus—Julius; Nay-yak-it-ando—jacket. Lastly was-tun for Boston, adding to this the plural suffix ha-kah, a term which in English might be interpreted *ites*. We have then Was-tun-ha-kah, or Bostonites, which in the Iroquois is the general term for Americans or the whole American nation. This almost supernatural intuition of the Indian mind crystallizes, I do not doubt, the opinion also and belief of at least 250,000 pale faces residing in the metropolis of Massachusetts. Of the length of some of incorporative words, which sometimes contain verb, subject, object, adjective or preposition, I would remark that the examples generally given in encyclopedias and works on language are almost entirely English Indian. That is, a missionary, perhaps, translating a portion of the Bible, finds some abstract word entirely beyond the comprehension of the Indian mind; he therefore takes Webster's definition of the word and translates that into the Indian in the form of one word until it has the appearance of the heading to a German railway time-table, the words consisting sometimes of forty letters and eleven or twelve syllables. The longest word thus Anglo-Indianized with which I have met is the Mohawk word for stove polish, the word itself being as indicative of the ingenuity of the inventor as the polish itself. It consisted of a glowing description of all the excellencies of said stove polish, which it required fifty-eight letters to express. The abstract nouns, represented as being absent from many of the Indian languages, are found in the Tuscarora, such as life, death, love, hate. An interesting feature of the language also might be traced in the prefer-